PATENT SPECIFICATION

DRAWINGS ATTACHED

911,701

Date of Application and filing Complete Specification Feb. 16, 1959.
No. 5326/59.
Application made in Switzerland (No. 56040) on Feb. 19, 1958.
Application made in Switzerland (No. 66176) on Nov. 28, 1958.
Complete Specification Published Nov. 28, 1962.

Index at acceptance:—Classes 81(1), C1, G5G; 39(3), H1J2; and 138(1), G2A2.

International Classification:—A61l. H05b. B67c.

COMPLETE SPECIFICATION

Improvements in or relating to Methods for Rinsing and Sterilizing Milking Machines

We, BUCHER-GUYER A.-G. MASCHINENFABRIK, a body corporate organised under the laws of Switzerland, of Niederweningen, Zurich, Switzerland, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a method of rinsing and sterilizing the milk-contacting parts of milking machines.

An adequate maintenance of milking machine installations first of all requires the cleaning and sterilizing of all parts of the milking machines which are in contact with milk. After every milking operation, all parts which are in contact with milk will be prerinsed with milk-warm water and thereafter cleaned with hot water. Afterwards, the hung-up milking sets will be filled with a sterilizing liquid composed of water and chemicals and will be exposed to the germ-killing action of the sterilizing liquid until they are used for the next milking. In order to prevent a noxious effect of the chemicals on the milk, a thorough rinsing with neutral water before milking will be required. If this rinsing is not done thoroughly enough, there is the danger that a residue of the chemicals may get into the milk during milking. Also, the possibility is not excluded that the rinsing will have been forgotten.

One of the objects of the present invention is to avoid these drawbacks by creating a method of sterilizing and rinsing the milk-contacting parts of a milking machine without resorting to the use of chemicals.

Another object of the invention is to provide a method of rinsing the parts of the milking machine with hot water before sterilizing them.

These and other objects are attained by the method of rinsing and sterilizing the milk-contacting parts, according to the present invention, in which the water is heated in a closed heatable vessel, the milk-contacting parts rinsed by passing therethrough part of the heated water, the remaining part of the heater water evaporated and the steam thus obtained immediately applied to the milk-contacting parts to sterilize them.

Further objects and advantages of the invention will be understood from the following description, by way of an example, a preferred embodiment of the invention with reference to the accompanying drawings in which:—

Fig. 1 is a vertical section through a rinsing and sterilizing apparatus for use in the method according to the present invention;

Fig. 2 is a section of a cover of the rinsing and sterilizing apparatus with an alternative form of the water and steam exit; and

Fig. 3 is a section of another type of the rinsing and sterilizing apparatus for use in the method according to the present invention.

The rinsing and sterilizing vessel 1 according to Figs. 1 and 2 comprises a container chamber 2 and a heating chamber 4 separated therefrom by an intermediate bottom 3. The container chamber may be closed by a cover 5;; this is obtained by a gasket 6 and by snap latches 7 disposed on the circumference of the container 1. An electric heater 16 supplied through a cable 15 is fixed to the intermediate bottom 3 in the heating chamber 4. A temperature fuse 17 is provided in the heating chamber 4 as a safety against excessive heating.

As shown in Fig. 1, the cover 5 features two holes 8 and 9 into which two pipe unions 10 and 11 are screwed. The pipe union 11 moreover is equipped with a cock 14. The pipe unions 10 and 11 are provided to take

[*Price* 4*s.* 6*d.*]

up the hoses 12 which lead to those parts of the milking machine which are to be rinsed and sterilized. A pipe 23 whose length is such that it provides a water and steam exit 24*a* situated at some distance from the bottom 3, opens into the hole 8.

On the right of Fig. 1, the hole 9 is connected with a shorter pipe 25 which can be extended by a sliding pipe extension 26 which can be locked on the pipe 25. By means of the pipe extension 26 the distance of a water and steam exit 24*b* from the bottom 3 can be varied.

As will be understood, a rinsing and sterilizing apparatus for use with the method of the present invention comprises either two pipes 23 or two extensible pipes 25, 26 for providing the water and steam exits. Only for the sake of simplicity, both types of pipes are shown on the same apparatus.

Fig. 2 shows a T-shaped pipe 27 forming a common connection with the pipe unions 10 and 11 and is therefore fixed between the unions 10 and 11. By loosening one of the pipe unions 10 and 11 the T-pipe 27 may be tilted from its vertical position into a slanting position and by tightening the lossened pipe union again it may be locked with the exit 24*c* in the desired position.

The method of rinsing and sterilizing according to the present invention in conjunction with the apparatus according to Figs. 1 and 2 is as follows:

The container chamber 2 is filled up to the rim with water whereby the respective water and steam exits 24*a* or 24*b* or 24*c* are situated beneath the water level 28*a*. When the water in the chamber 2 has attained its boiling point, hot water flows under the influence of the steam pressure through the pipes 23 or 25, 26 or 27, respectively, the pipe unions 10 and 11 and the hoses 12 to the milk-contacting parts of the milking machine. The hot water rinses the connected parts of the milking machine and frees them of any impurities which may have been left over from the preceding manual cleaning. As soon as the water has reached the level 28*b* which is below the water and steam exit 24*a*, 24*b* or 24*c*, respectively, the flow of water ceases. The remainder of the water below the level 28*b* is left back and evaporates under the continued heating. Like the water previously, the steam now flows through the respective water and steam exits 24*a* or 24*b* or 24*c* to the parts of the milking machine. Evaporation is continued until all water is evaporated and the temperature fuse 17 cuts the apparatus automatically off.

The quantitative ratio of the rinsing water to the evaporation water is determined by the distance of the respective water and steam exits 24*a* or 24*b* or 24*c* from the intermediate bottom 3.

With the types of water and steam pipes shown at 25, 26 and 27, this distance is adjustable. With the water and steam pipes according to Fig. 1, the adjustment is done by sliding the extension 26 on the pipe 25 and according to Fig. 2, it is done by tilting the T-pipe 27 from the vertical position into an inclined position. With the rinsing and sterilizing apparatus according to Figs. 1 and 2, two different operations can be carried out successively, namely, rinsing with hot water and sterilizing with steam, without requiring separate devices or additional work.

Another advantage is that the quantity of water to be evaporated can be predetermined so that the time during which the milk-contacting parts of the milking machine are exposed to the steam is always the same.

Fig. 3 shows another rinsing and sterilizing apparatus for use in the method according to the present invention. As opposed to Figs. 1 and 2, the pipe unions 10*b* and 11*b* are fixed to the container wall. From them, angle pipes 29 and 30 extend into the chamber 2. The cover 5 is provided with a water filling socket 31 which may be formed into a cock. The water filling socket 31 is connected to a water tap 33 by means of a hose 32.

The method used with the rinsing and sterilizing apparatus according to Fig. 3 is the following: By opening the water tap 33, the container chamber 2 is filled with water. As soon as the water reaches the level 28*c*, the water flows through the angle pipes 29 and 30 and the hoses 12 to the parts of the milking machine, which causes a thorough rinsing of the milking machine parts with cold water.

After some time, the water is shut off by the tap 33 and the heating of the sterilizer is switched on. Thereby, a quantity of water extending up to the level 28*c* is heated to the boiling point. In order to prevent the water from flowing off before the boiling point has been reached, the angle pipes 29 and 30 have small holes 34 through which air can enter the connecting hoses 12. When the boiling point has been reached, the rinsing with hot water and the sterilizing with steam take place as already described with reference to Figs. 1 and 2.

Hence the rinsing and sterilizing apparatus according to Fig. 3 permits the rinsing of the milk-contacting parts of the milking machine first with cold water, and thereafter with hot water, and to sterilize them with steam subsequently.

Another possibility of using the rinsing and sterilizing apparatus is by employing the water filling socket 31 as a steam exit. In this case, the pipe unions 10*b* and 11*b*, instead of being connected with the hoses 12, are closed by suitable plugs (not shown in the drawing). This permits the heating and evaporation of a quantity of water which corresponds to the whole content of the

container. Such a large quantity of steam is required, when the apparatus is to be used for steam-sterilizing of large milk vessels. In this case, the apparatus is no longer used for rinsing but only for steam-sterilizing.

WHAT WE CLAIM IS:—

1. A method of rinsing and sterilizing the milk-contacting parts of milking machines, comprising the steps of heating water in a closed heatable vessel, rinsing the milk-contacting parts by passing therethrough part of the heated water, evaporating the remaining part of the heated water and immediately applying the steam thus obtained to the milk-contacting parts to sterilize them.

2. A method as claimed in Claim 1, comprising the further step of supplying fresh water to the milk-contacting parts through the vessel before closing the latter and heating the water contained therein.

3. The method of rinsing and sterilizing the milk-contacting parts of a milking machine hereinbefore described with reference to Fig. 1, Fig. 2, or Fig. 3 of the accompanying drawings.

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Leamington Spa: Printed for Her Majesty's Stationery Office by the Courier Press.—1962.
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies may be obtained.

Fig. 1

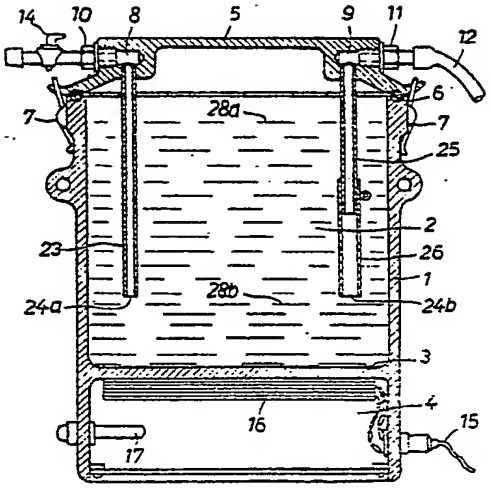
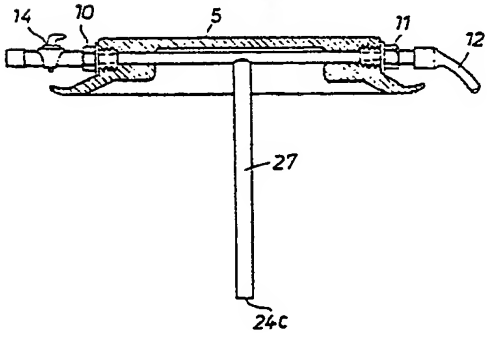

14
10
8
5
9
11
12
6
7
28a
7
25
2
23
26
1
28b
24a
24b
3
4
16
15
17

Fig. 2


14
10
5
11
12
27
24c

911731 COMPLETE SPECIFICATION

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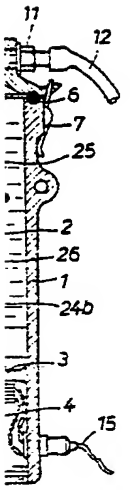
Sheets 1 & 2



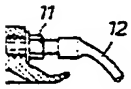
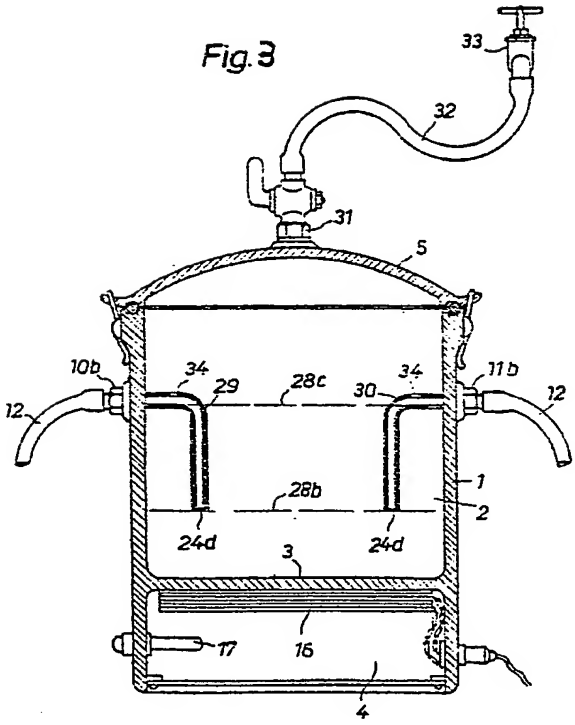


Fig. 3



911701 COMPLETE SPECIFICATION

2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheets 1 & 2

Fig.1

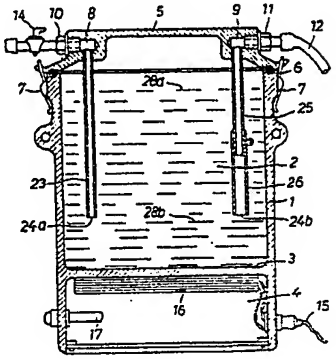


Fig.2

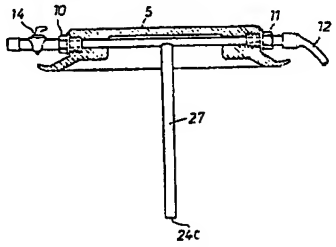


Fig.3